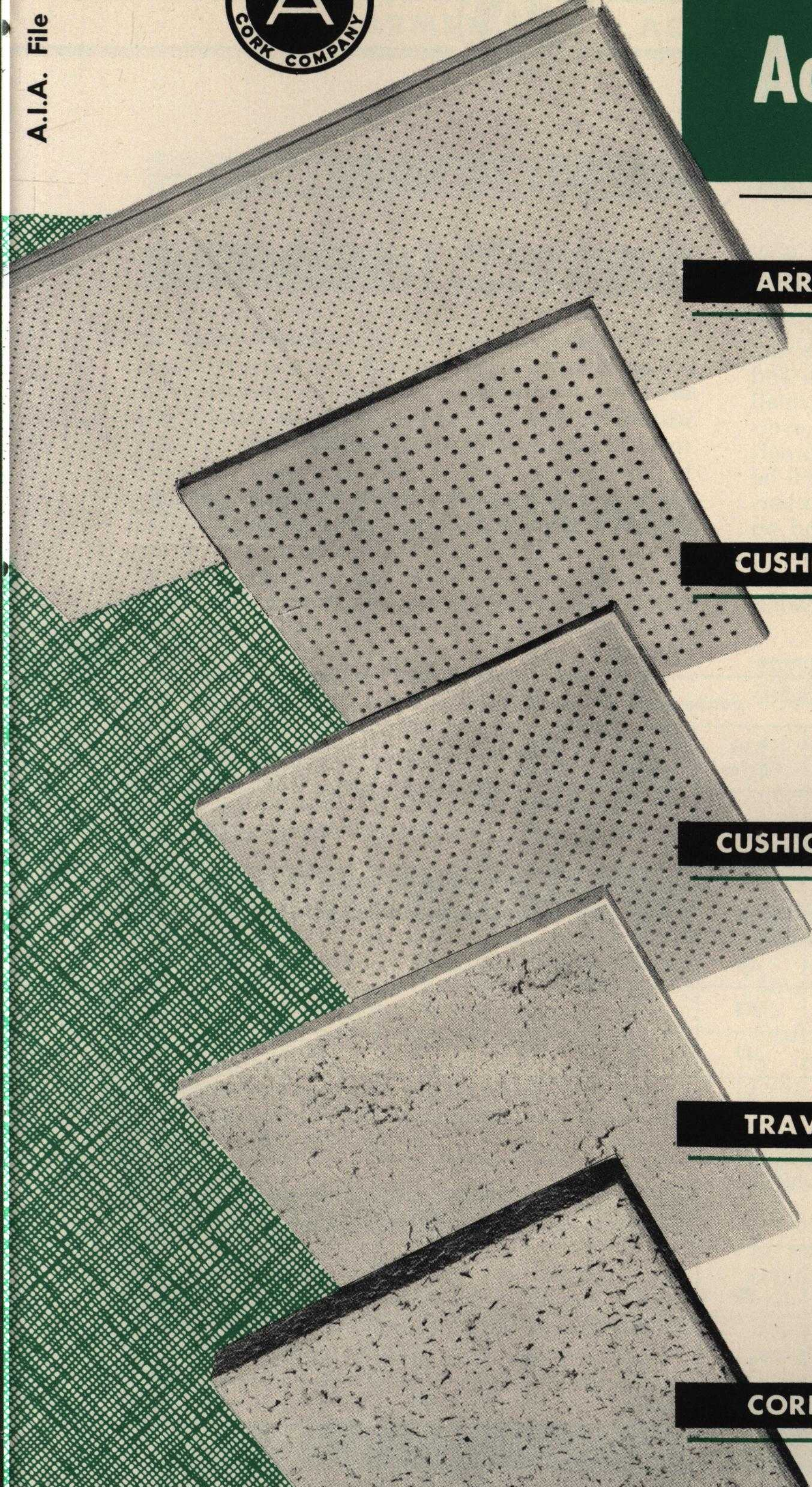
Armstrong's Acoustical Materials



ARRESTONE

Perforated metal pan containing a sound-absorbing mineral wool pad. Pad separated from pan to expose its full surface to sound. Pan finished in white baked-on enamel.

CUSHIONTONE

Rigid wood-fiber tile with a surface perforated by drilled holes in a rectangular pattern. Surface and beveled edges are factory-finished with two coats of white paint.

CUSHIONTONE F

Incombustible mineral wool tile with surface perforated in a diagonal pattern. Factory-finished with a white resin-emulsion paint on face and on all beveled edges.

TRAVERTONE

Mineral wool tile with a fissured surface resembling Travertine marble. Incombustible. Finished with two coats of white resin-emulsion paint. Edges beveled or square.

CORKOUSTIC

Cork tile with fissured cellular surface. Extremely moisture resistant and high in insulating value. Face and beveled edges are finished with white resin-emulsion paint.

ARMSTRONG CORK COMPANY
Lancaster, Pennsylvania

PROPER SELECTION OF ACOUSTICAL MATERIALS

High acoustical efficiency should not be the only consideration in selecting an acoustical material. Materials of relatively low efficiency will quiet areas of average noise level if there is enough space to install a sufficient amount of material. Except in areas where noise levels are high and space for acoustical material is limited, small points of difference in efficiency can be overlooked. Other characteristics, such as fireproofness, insulation value, or appearance may well be more important to the selection. Whatever characteristics are most important, you will find an Armstrong Acoustical Material to meet your requirements. Armstrong contractors are always ready to help you solve special acoustical problems.

1. EFFICIENCY

Since noise is the mixture of confused sounds at many frequencies, acoustical efficiency is measured by the "noise reduction coefficient" of a material or the average percentage of sound it absorbs at all frequencies. ARRESTONE is the most highly efficient (.85) of the Armstrong materials (see chart). Where a predominating frequency exists, a material should be considered for its performance at that level. For example, in auditoriums, where clarity is desired, the frequency of the human voice (512 cycles) is most important.

MATERIAL	Sound-absorption coefficients							
Mounting †	Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	4096 Cycles	Noise Reduction Coefficient
ARRESTONE mechanically supported	2½"	.25	.56	.99	.99	.77	.60	.85
CUSHIONTONE								
No. 1	½"	.05	.18	.56	.76	.77	.73	.55
	¾"	.10	.28	.66	.91	.82	.69	.65
	⅞"	.09	.28	.74	.98	.78	.70	.70
No. 2	½"	.07	.47	.55	.70	.77	.74	.60
	¾"	.14	.51	.59	.87	.81	.70	.70
	⅞"	.17	.51	.73	.95	.75	.72	.75
CUSHIONTONE F* No. 1	¾"							
TRAVERTONE No. 1	¾"	.06	.23	.78	.97	.84	.80	.70
CORKOUSTIC No. 1	1½"	.04	.13	.44	.76	.43	.55	.45
No. 2	1½"	.14	.25	.61	.43	.52	.54	.45

Acoustical Materials Association Tests

***Test figures available at later date**

How to use this chart: For each of the Armstrong acoustical materials listed in the column at left, sound-absorption figures are given at six frequencies. "Noise Reduction Coefficient," shown at right, is average percentage of sound absorbed. This figure is the measure of acoustical efficiency and is used for most noise problems which involve sounds at many frequencies.

†MOUNTINGS: No. 1—Cemented to plaster. No. 2—Nailed to furring 12" O.C.

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2. COST

Armstrong's acoustical materials cover a cost-range from low to high. In general, they can be ranked as follows: lowest, CUSHIONTONE; next, CUSHIONTONE F and TRAVERTONE; then CORKOUSTIC; and highest, ARRESTONE. Cost is usually dependent upon the necessary method of application, and is lowest where material can be applied by nailing or cementing to an existing surface (see diagrams on page 7).

3. APPEARANCE

While the marble-like fissured surface of TRAVERTONE is generally considered most desirable from an appearance standpoint, there are other appearance features common to the Armstrong materials. Most important of these is that all bevels are factory painted like the face of the material. TRAVERTONE units are available with square edges, if desired. In perforated materials, holes are cleanly drilled. Unusual design arrangements are possible by the use of rectangular sizes and unperforated border units.

4. FIRE RESISTANCE

Three of Armstrong's acoustical materials are rated as incombustible. Two of them, TRAVERTONE and CUSHIONTONE F, are made of mineral wool. The third, ARRESTONE, consists of a steel pan containing a mineral wool pad wrapped in flame-proof paper. CUSHIONTONE is also available with a factory-applied paint finish, approved as fire retardant.

5. MOISTURE RESISTANCE

Where moisture conditions are extreme, only CORKOUSTIC is recommended. Its cork composition makes it an ideal material for natatoriums and other high-humidity areas.

6. WEIGHT

Structural reinforcement should almost never be necessary with the use of the Armstrong materials, as all are light in weight. However, where loads must be figured accurately, the following weights per square foot (excluding mounting) may be used:

CORKOUSTIC	1.50 lbs.
CUSHIONTONE (½″ thick)..	.70 lb.
CUSHIONTONE (¾″ thick)..	.92 lb.
CUSHIONTONE (⅞″ thick)..	1.09 lbs.
CUSHIONTONE F..........	lbs.
TRAVERTONE	1.37 lbs.
ARRESTONE	1.02 lbs.

7. INSULATING VALUE

All of Armstrong's acoustical products, being low density materials, have considerable thermal insulation value. CORKOUSTIC, 1½″ thick, having a thermal conductance of only 0.18 B.T.U., is outstanding as an insulator.

8. LIGHT REFLECTION

Among the Armstrong products, there is very little variation in light reflection percentages. CORKOUSTIC ranks highest (.80), followed closely by TRAVERTONE (.79), CUSHIONTONE (.78), and ARRESTONE (.76).

9. MAINTENANCE

While Armstrong's acoustical materials require no more frequent cleaning or painting than any ordinary painted surfaces, they can be cleaned and repainted when necessary without noticeable impairment of acoustical efficiency. A folder of maintenance instructions is available.

SIZE OF UNIT

Material	Length	Width	Thickness	Material	Length	Width	Thickness
ARRESTONE	24″	12″	2½″	TRAVERTONE	12″	12″	¾″
CUSHIONTONE	12″	12″	½″, ¾″, ⅞″	TRAVERTONE	12″	6″	¾″
CUSHIONTONE	24″	12″	½″, ¾″, ⅞″	CORKOUSTIC	12″	12″	1½″
CUSHIONTONE F	12″	12″	¾″	CORKOUSTIC	12″	6″	1½″

SPECIFICATIONS FOR ARMSTRONG'S ACOUSTICAL MATERIALS

HOW TO USE THESE SPECIFICATIONS

In the following pages of specifications, all essential subject matter is presented as pre-written specification clauses in regular type. Material in italics is explanatory or indicates where the architect must fill in dimensions, brand names, or similar information.

To form a complete specification, simply copy all paragraphs except those not pertinent to the job in hand.

In certain cases, especially in remodeling, some details delegated to related trades may better be assigned to the Acoustical Contractor; for example, the installation of furring.

BRIEF SPECIFICATIONS

Furnish and install Armstrong's (Cushiontone, Cushiontone F, Corkoustic, Travertone, or Arrestone) in the finishes, designs, and sizes as herein specified, in the areas listed below, or where shown on the drawings. The acoustical material is to be installed according to the (state method or system to be used).

All products covered by these specifications are to be installed in accordance with the latest edition of Armstrong's standard specifications by a qualified Armstrong Acoustical Contractor whose bid shall include all the labor and materials required.

(List areas, sizes, and designs here.)

COMPLETE SPECIFICATIONS

Specifications for Acoustical Contractor

SCOPE

The General Conditions of the Contract Are a Part of These Specifications.

1. Work Included

This contractor shall furnish all labor and material required to complete all the acoustical work shown on the drawings, or herein specified, as follows:

a. Install (Armstrong's Cushiontone, Cushiontone F, Corkoustic, Travertone, Arrestone)

(1) Where shown on drawings, or

(2) Where shown on schedule of finishes.

b. Acoustical treatment, unless specified, shall not include (surfaces of all beams, girders, soffits, arches, etc.).

c. Ceilings: Apply (name material) to (brown coat of plaster, plaster board, wood furring, bottoms of masonry arches or slabs, plaster of suspended ceilings, mechanical suspension system).

d. Walls: Apply (name material) to (brown coat of plaster, plaster board, wood furring, masonry, wood furred masonry walls, mechanical suspension system).

e. Provide all fastenings, hangers, anchors, temporary facilities and materials, and other accessories as required to complete the work of this section.

f. Do all bracing, cutting, fitting, shimming, reinforcing, and temporary protection for proper installation of the work of this section of the specifications.

g. Examine preparatory work by others; and report any defects to the architect prior to proceeding with the work. Starting of the work shall imply acceptance by this contractor of the preparatory work.

h. Submit shop drawings of acoustical work in the following areas: (list areas).

i. Tests: Submit with estimate test reports of the Acoustical Materials Association for each kind or type of material listed in the estimate.

j. Submit: . . . (number) samples of each type of material.

k. Guarantee.

2. Work Excluded

(Items which could be considered as part of this section, but which are usually included in the specifications for other trades.)

a. Foundation surfaces for all beams, girders, soffits, arches, etc.

b. Insulating for sound transmission, except as specifically included.

c. Soundproof doors (wood), etc.

d. Floating wall and ceiling insulation.

e. Floating floor insulation.

f. Metal or wood moldings.

g. Moving electric fixtures.

h. Plaster board foundation.

i. Plastering foundation.

j. Furring and other wood construction.

MATERIALS

3. Cushiontone

a. Acoustical material shall be

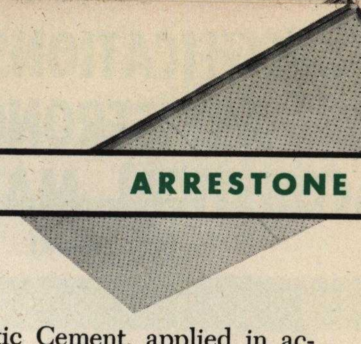
(1) Cushiontone as manufactured by the Armstrong Cork Company.

(2) Perforated wood fiber tiles (6″ x 12″, 12″ x 12″, 12″ x 24″) and shall be (½″, ¾″, ⅞″) thick.

(3) Tile shall have 484 perforations per 12″ x 12″ unit.

(4) Tiles shall have 78% light reflection.

(5) The tiles, when applied to a solid backing, shall have a noise reduction coefficient of (.55 for ½″, .65 for ¾″, .70 for ⅞″).



b. Adhesive

(1) Adhesive for installing Cushiontone shall be Armstrong's Acoustic Cement, applied in accordance with the manufacturer's instructions.

c. Moldings

(1) Wood moldings shall be of stock pattern as approved (or special as detailed) all to be made of (white pine or ....).

(2) Metal moldings shall be of (stainless steel, chromium plated metal, solid aluminum, brass, copper, bronze, or black with polished or satin velvet finish, or ....).

d. Nails

(1) Nails for the erection of Cushiontone shall be (flat head or collar) nails, the head about ⅛″ to 5⁄32″ in diameter.

(2) Nails shall be at least ½″ longer than the thickness of the Cushiontone.

e. Screws

(1) Screws for the installation of Cushiontone shall be No. 3 screws, (⅛″ longer than the thickness of the Cushiontone), either round or oval head.

4. Cushiontone F

a. Acoustical material shall be

(1) Cushiontone F as manufactured by the Armstrong Cork Company.

(2) Perforated mineral wool tiles (12″ x 12″ or 12″ x 24″) with face and all bevels painted.

(3) Tile shall have 685 perforations per 12″ x 12″ unit.

b. Adhesive for installing Cushiontone F shall be Armstrong's Acoustic Cement, and shall be applied in accordance with manufacturer's instructions.

c. Moldings.

(1) Wood moldings shall be of stock pattern as approved (or special as detailed) all to be made of (white pine or ....).

(2) Metal moldings shall be of (stainless steel, chromium plated metal, solid aluminum, brass, copper, bronze, or black with polished or satin velvet finish, or ....).

5. Corkoustic

a. Acoustical material shall be

(1) Corkoustic as manufactured by Armstrong Cork Company.

(2) Baked cork acoustical tile (6″ x 12″ or 12″ x 12″) x 1½″ thick, beveled on all edges, and with face and bevels painted.

(3) Tile shall have 79% light reflection.

(4) Sound absorption—The tiles when applied to a solid backing shall have a noise reduction coefficient of .45.

b. Adhesive

(1) Adhesive for installing Corkoustic shall be Armstrong's Acoustic Cement, applied in accordance with the manufacturer's instructions.

c. Moldings

(1) Wood moldings shall be stock pattern as approved (or special as detailed) all to be made of (white pine or ....).

(2) Metal moldings shall be of (stainless steel, chromium plated metal, solid aluminum, brass, copper, bronze, or black with polished or satin velvet finish, or ....).

6. Travertone

a. Acoustical material shall be

(1) Travertone as manufactured by the Armstrong Cork Company.

(2) Mineral wool fissured acoustic tile (12″ x 12″, 6″ x 12″, 12″ x 24″) with edges (beveled or square) with face and all bevels painted. Tiles shall be ¾″ thick.

(3) Sound absorption—The tiles when applied to a solid backing shall have a noise reduction coefficient of .70.

(4) Tile shall have 78% light reflection.

b. Adhesive

(1) Adhesive for installing Travertone shall be Armstrong's Acoustic Cement, applied in accordance with the manufacturer's instructions.

c. Moldings

(1) Wood moldings shall be of stock pattern as approved (or special as detailed) all to be made of (white pine or ....).

(2) Metal moldings shall be of (stainless steel, chromium plated metal, solid aluminum, brass, copper, bronze, or black with polished or satin velvet finish, or ....).

7. Arrestone

a. Acoustical material shall be

(1) Arrestone as manufactured by the Armstrong Cork Company.

(2) Perforated 26 ga. metal units containing a mineral wool sound absorbing pad and suspended from a mechanical suspension system. Tile shall be in 12″ x 24″ units with a center bevel to simulate 12″ x 12″ units.

(3) Tile shall have 1105 perforations per square foot, .093″ in diameter.

(4) Tile shall have a baked-on finish which shall reflect 76% of the incident light.

(5) Sound absorption coefficients shall be .99 for 512 and 1024 cycles and the noise reduction coefficient shall be .85.

b. Suspension System

(1) Tile shall be supported on steel T bars supported as specified under "mechanical installation."

c. Moldings

(1) Tile at walls shall fit into a metal channel

SPECIFICATIONS FOR ARMSTRONG'S ACOUSTICAL MATERIALS

(Continued)

finished to match the tile.

(2) Wood moldings shall be of stock pattern as approved (or special as detailed) all to be made of (white pine or ....).

(3) Metal moldings shall be of (stainless steel, chromium plated metal, solid aluminum, brass, copper, bronze, or black with polished or satin velvet finish, or ....).

INSTALLATION

8. Installation—General

a. This contractor shall consult and cooperate with trades whose work precedes and follows acoustical installation to permit orderly and expeditious procedure, in executing work of this section of the specification.

b. Acoustical material (insert name) shall be installed over a surface of (state material) by means of (adhesive, nails, screws, or mechanical suspension system). Square edge tile shall have metal or fiber splines inserted in kerfs to keep faces flush.

9. Preparation

a. Plaster Surfaces

(1) New plaster. Apply acoustical material direct to dry and thoroughly seasoned brown coat.

(2) Treat white coat finish with zinc sulphate (or prime with one coat of Armstrong's Wall Size).

(3) Old plaster. Remove previous coverings (such as paper or burlap).

(4) Unpainted. Unpainted plaster which is sound and firm may receive acoustical material without other preparations. Surfaces which are porous or dusty shall be treated with Armstrong's Wall Size.

(5) Painted. Test painted surfaces for soundness under action of acoustic cement. If the paint does not soften in 48 hrs., apply acoustical material directly to the surfaces. If paint is soft it must be thoroughly removed before the application of acoustical materials.

b. Concrete Surfaces

(1) When concrete surfaces are thoroughly dry wash with zinc sulphate solution and apply high quality spar varnish after ceiling has dried.

(2) If concrete forms have been oiled, thoroughly remove oil from concrete by scrubbing with washing soda, rinsing, and then treating with zinc sulphate and spar varnish.

10. Cementing (Cushiontone and Cushiontone F, Travertone, and Corkoustic)

a. Erect acoustical material with Armstrong's Acoustic Cement. Spot-cement back of tiles and apply tiles to the base, sliding them back and forth about one inch to spread the adhesive. Apply adhesive in spots of even thickness in order to insure leveling of the tile.

11. Nailing (Cushiontone)

a. Apply building paper to furring.

b. Erect acoustical tiles direct to wood furring by the use of flat-head needle-pointed (or collar) nails in one of the shallow holes in each corner of every 12″ x 12″ unit. Unperforated tile shall be toe-nailed at the edge and the nails countersunk with the holes concealed (or touched up).

12. Screw Installation (Cushiontone)

a. Apply building paper to furring.

b. Install Cushiontone to wood furring strips with No. 3 (⅛″ longer than thickness of tile) round or oval head wood screws in one of the shallow holes in each corner of every 12″ x 12″ unit.

13. Mechanical Installation

a. Arrestone

(1) Arrestone shall be installed on a mechanical suspension system consisting of T bars, clipped to 1½″ plasterer's channels supported from the ceiling construction above by means of flat bar hangers in accordance with the manufacturer's instructions. T bars shall be not over 2 feet apart and channels not over 4 feet apart.

(2) Arrestone shall be installed by suspending the T bars directly from the ceiling construction on flat bar hangers at 4-foot intervals, the T's being spaced 2 feet apart.

(3) Arrestone shall be applied to T bars directly attached to furring strips or to the ceiling construction.

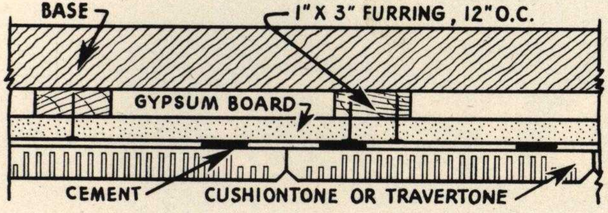
14. Painting

a. The finished installation shall be cleaned and all abraded spots touched up to form a satisfactory installation.

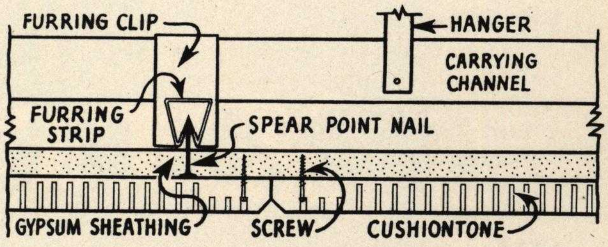
15. Guarantee

This contractor shall guarantee that all work executed under this section of the specification will be free from defects of materials and workmanship, provided any such defect is brought to the attention of the contractor in writing within one year after completion of the work. On such notice, the contractor shall, at his own expense, make the necessary repairs or replacements of the defective work in question. The owner shall be responsible only for the removal and replacement of fixtures or other equipment which may interfere with the work to be done.

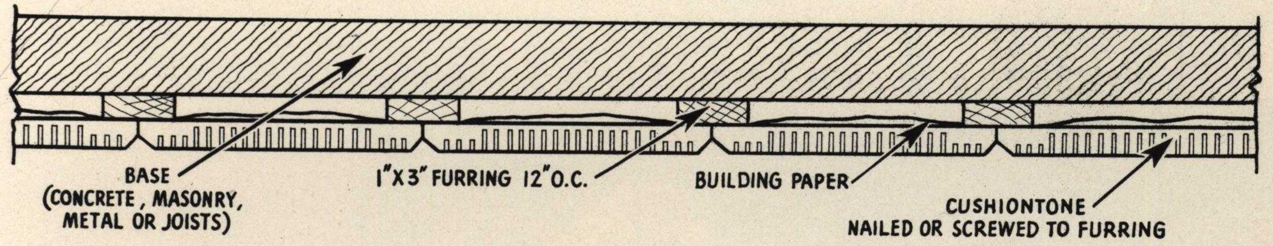
INSTALLATION DETAILS



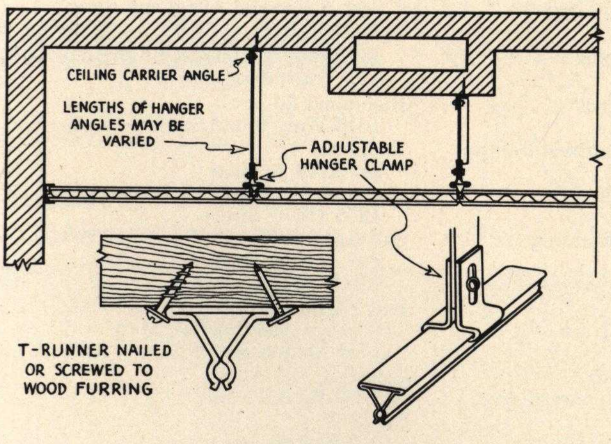
Cement application over furring. When the base surface (masonry, rough plaster, rough concrete, or open joists) does not provide a satisfactory base for cement application, a recommended method is to install 1"x3" cross furring, 12" o.c., and cover with gypsum board or lath. This provides a sound base for cementing.

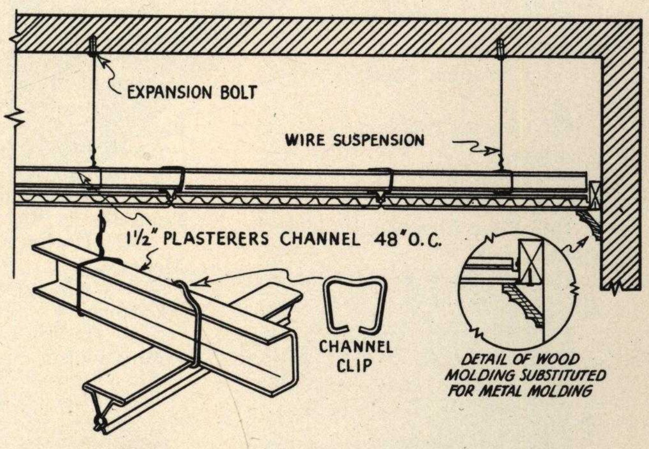


Mechanical installation of Cushiontone. There are several mechanical suspension systems which can be used for application of Cushiontone. The diagram above shows one recommended method. Metal carrying channels and furring strips support a surface of gypsum sheathing. Cushiontone is screwed to this surface.


BASE (CONCRETE, MASONRY, METAL OR JOISTS)
1"X3" FURRING 12"O.C.
BUILDING PAPER
CUSHIONTONE NAILED OR SCREWED TO FURRING

Application of Cushiontone to wood furring by nails or screws. By the use of cross furring 12" o.c., Cushiontone may be applied by nailing or screwing, in spite of an unsatisfactory base surface. When this method is used, it is important to cover the furring with a layer of building paper to prevent "breathing" at the joints.


CEILING CARRIER ANGLE
LENGTHS OF HANGER ANGLES MAY BE VARIED
ADJUSTABLE HANGER CLAMP
T-RUNNER NAILED OR SCREWED TO WOOD FURRING


EXPANSION BOLT
WIRE SUSPENSION
1½" PLASTERERS CHANNEL 48" O.C.
CHANNEL CLIP
DETAIL OF WOOD MOLDING SUBSTITUTED FOR METAL MOLDING

Mechanical suspension of Arrestone. The metal T-runners, to which the Arrestone metal pans are clamped, may be nailed or screwed directly to wood, or suspended from metal hanger angles, as shown above at left. Another method, shown at right, calls for wire suspension of channels, to which the T-runners are clipped 24" o.c.

ARMSTRONG'S BUILDING MATERIALS

ACOUSTICAL MATERIALS

Cushiontone®
Arrestone®
Travertone*
Corkoustic®

INSULATIONS

Low Temperature

(See Sweet's File, Architectural, section 10b)
Corkboard
Cork Pipe Covering
Foamglas**
Mineral Wool Board
Fiberglas***

HEAT

85% Magnesia High Temperature Insulation
Air-cell Other Heat Insulation Materials

HIGH TEMPERATURE

Insulating Refractories

COMFORT

Corkboard and Temlok Roof Insulation
(See Sweet's File 10a)
Temlok Lath
Temlok Sheathing
Armstrong's Insulating Wool
(a Fiberglas product)

WALL AND CEILING MATERIALS

Temlok®
Monowall®
Linowall®

RESILIENT FLOORINGS AND WALLS

(See Sweet's File 13e)
Asphalt Tile
  Standard
  Industrial
  Greaseproof
  Conductive

Linotile®
Rubber Tile
Cork Tile
Linoleum

Detailed information about any of these products and their application may be obtained promptly from Armstrong Cork Company, Building Materials Division, Architects' Service Bureau, Lancaster, Pennsylvania.

®Pittsburgh Corning Corp.   *®Owens-Corning Fiberglas Corp.
*Trade-mark for which registration has been applied.

ARMSTRONG OFFICES

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727 W. Peachtree Street, N.E.

Baltimore 2
114 South Street

Birmingham 3
501 American Life Building

Boston 16
131 Clarendon Street

Buffalo 2
822 Genesee Building

Charlotte 2
508 Johnston Building

Chicago 54
13th Floor Merchandise Mart

Cincinnati 2
138 East Court Street

Cleveland 15
209 Hanna Building Annex
Cor. Prospect Ave. and E. 14th St.

Columbus 12
1282 Edgehill Road

Dallas 1
Ervay St. and Patterson Avenue

Denver 2
510 Interstate Trust Building

Detroit 26
Free Press Building
321 Lafayette Avenue, West

Hartford 5
8 Hurlburt Street

Houston 2
841–844 Electric Bldg.
Fannin and Walker Streets

Indianapolis 2
1120 Central Avenue

Jacksonville 4
1277 Houston Street

Kansas City 6
Twenty W. Ninth Street Building

Los Angeles 15
719 Bendix Building

Louisville 2
221 Heyburn Building

Memphis 3
201 Washington Avenue

Milwaukee 4
1102 W. Bruce Street

Minneapolis 2
511 Plymouth Bldg.
Sixth Street & Hennepin Ave.

New Orleans 12
928 Tchoupitoulas Street

New York 16
295 Fifth Avenue

Omaha 2
309 Patterson Building
305 South 17th Street

Philadelphia 6
Public Ledger Building
6th and Chestnut Streets

Pittsburgh 22
24th Street and Allegheny River

Providence 3
1525 Industrial Trust Building
111 Westminster Street

Richmond 20
1615 West Broad Street

Rochester 4
217 East Avenue

St. Louis 3
1205 Olive Street

Salt Lake City 1
225 Kearns Bldg.
136 S. Main Street

San Francisco 3
Western Merchandise Mart
1355 Market Street

Seattle 1
1932 First Avenue

Tulsa 3
219 East Archer Street

Washington 6, D. C.
1713 K Street, N. W.

ARMSTRONG CORK COMPANY

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